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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,224	12/08/2004	John R Humphrey	10354*1	2593

23416 7590 08/09/2006

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EXAMINER

GUTIERREZ, ANTHONY

ART UNIT PAPER NUMBER

2857

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/517,224

Applicant(s)

HUMPHREY ET AL.

Examiner

Anthony Gutierrez

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/8/04</u> . | 6) <input type="checkbox"/> Other: ____ |

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art, including the paper to Liu, in view of Walton et al. (U.S. Patent No. 6,785,341 B2).

Applicant's admitted prior art to Liu addresses calculation of the PSTD algorithm for different types of waves in different types of media (III. PSTD Algorithm). The Applicant further addresses in the instant Specification that equations in the PSTD take the form recited in claims 2, 7, 12, and 17 (page 4, equation 1) and addresses frequency domain spatial derivative calculations (equation 2) consistent with the paper to Liu (page 922 complex function equations (20) and (21)). The paper further address that the use of FFT and inverse FFT calculations used here save computation time (page 922, B. Use of FFT Algorithms).

Applicant's admitted prior art fails to specifically teach the hardware implementation, by which a FPGA or DSP chip is used for the FFT and IFFT units.

Walton, however, teaches the use transmitter and receiver systems which function to carry out both FFT and IFFT transformation) Figure 3, col. 15, and lines 40-57)

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in hardware components, namely FPGA or DSP chips. Walton also teaches the use of software, or a combination thereof (col. 37, line 63-col. 38, line 4).

It therefore would have been obvious to one of ordinary skill in the art, at the time of invention to implement the FFT and IFFT calculations of Liu, through the hardware components disclosed by Walton, as it would have been obvious to implement the calculations in software or a combination, thereof, in order to provide the most comprehensive applicability of the method, as each configuration has known benefits for different applications, in this example, shorted computation time than software implementation of the FFT or IFFT calculations.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

United State Patent Application Publication US 2004/01434439 A1 to Kang et al. teaches pseudo cepstral adaptive filters.

US Patent 6,956,815 B2 to Chiodini discloses the use of pseudo inverses of linear transformations using a hardware configuration.

US Patent 6,952,460 B1 to Van Wechel et al., teaches FFT and IFFT hardware configurations.

US Patent 6,434,583 B1 to Dapper et al., teaches an apparatus for providing FFT and IFFT transforms.

US Patent 6,366,872 B1 to Fetter teaches data prediction in DSP methods for transient spectroscopies.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Gutierrez whose telephone number is (571) 272-2215. The examiner can normally be reached on Monday to Friday.

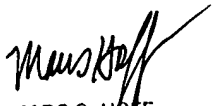
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on (571) 272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AG

8/7/06

Anthony Gutierrez
Examiner
Art Unit 2857


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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